

REMARKS*Claim Rejection under 35 USC § 102(b)*

Claims 1, 3, 4, 8-14, and 18-21 were rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 6,472,092, issued to Matsuda et al. in 2002.

Section 102(b) applies to art that “was patented or described in a printed publication ... more than one year prior to the date of application ...” The present application was filed on February 12, 2001. Matsuda et al. issued on October 29, 2002, after the filing date of the present application, and so not more than one year before, as required for Section 102(b). Therefore, Matsuda et al should be withdrawn as a reference.

Even if considered, Matsuda et al. is readily distinguished from Applicants' invention. Matsuda et al. describes a fuel-reforming apparatus that includes a combustion chamber for burning a fuel, e.g., methanol, injected through injector 48, and (first) air introduced through passage 56. The product combustion gas is mixed with (second) air introduced through passage 64 and holes 70, col. 11, lines 33-38. The key distinction, though, is that in Matsuda et al., the first air is consumed in the combustion process, and the second air is mixed with combustion gas. It is pointed out that the combustion products, like carbon dioxide and water, are not suited for reforming, and that Matsuda et al. relies totally on the second air for the reforming reactions. In contrast, Applicants' method blends heated air and cooler air to adjust the temperature, and then adds the fuel

to the blend. Applicants thus provide air, at the desired temperature, that is not diluted, such as with combustion gases. Matsuda et al. does not mix air streams, and produces air contaminated with combustion gas. Thus, Matsuda et al. does not teach, or even suggest, Applicants' invention.

Claim 1 is directed to Applicants' method of controlling temperature at a fuel reformer that includes adding first air to the reformer, and adding second air to the reformer. The first air is at a first temperature; the second air is at a second temperature; and the quantities are adjusted to produce a target temperature. In Matsuda et al. air added to the combustion chamber 46 is not air when added to the reformer 26, but rather is combustion gas. The air 64 added to the reformer is not blended with other air to achieve the desired temperature. Thus, Matsuda et al. does not anticipate, or even suggest, Applicants' invention in claim 1.

Claims 3, 4, 8-10, and 12 are dependent upon claim 1, and so not taught or suggested for the reasons set forth with regard to that claim.

Claim 13 is directed to Applicants' method of controlling temperature of a fuel reformer, similar to claim 1, but recites additional features. In accordance with claim 13, first air is heated, and the heated air is mixed with second air. Matsuda et al. combusts the air to form combustion gases, as opposed to heated. As for the air needed for the reformer, Matsuda et al. mixes the air with the combustion gases, as opposed to blending air of different temperatures. Claim 13 calls for mixing the blended air with fuel.

Matsuda et al. mixes air and fuel before combustion, and adds fuel to the air before mixing with the combustion gases, but never shows mixing the airs before adding the fuel. Therefore, Matsuda et al. does not teach or suggest Applicants' method in claim 13, or in claims 14-18 and 21 dependent thereon.

Accordingly, it is respectfully requested that the rejection of the claims as anticipated by Matsuda et al be reconsidered and withdrawn, and that the claims be allowed.

Claim Rejections under 35 USC § 103

Claim 2 was rejected under 35 U.S.C. § 103 as unpatentable over Matsuda et al. in view of Japanese patent document JP 1-217865, published in 1989.

Claim 2 is dependent upon claim 1. For the reasons set forth with regard to the rejection of claim 1, Matsuda et al. does not qualify as prior art under Section 102(b), and blends air with combustion gas, in marked contrast to Applicants' method of blending air streams of different temperatures.

The Japanese patent document does not make up the deficiency. JP '865 is cited to show a fuel cell having a temperature sensor at the inlet to a reformer. However, JP '865 does not appear to show blending air streams of different temperature to adjust the operating temperature of the fuel reformer. Thus, even if combined with Matsuda et al.,

there is nothing in the references to point the practitioner to these features of Applicants' invention.

Applicants' method in claim 1 calls for adding a first air to a reformer, and a second air to a reformer, wherein the quantities are adjusted to produce a target temperature for the reformer. Matsuda et al. combusts the first air before the reformer, so that only the second air reaches the reformer. Nothing in JP '865 points the practitioner to eliminate the combustion process in Matsuda et al. and/or to heat one air stream and mix it with another. Thus, even if combined, the references do not suggest Applicants' invention in claim 1, or dependent claim 2.

Accordingly, it is respectfully requested that the rejection of the claim 2 based upon Matsuda et al. and JP '865 be reconsidered and withdrawn, and that the claim be allowed.

Claims 5-7 and 15-17 were rejected under 35 U.S.C. § 103 as unpatentable over Matsuda et al. in view of United States Patent No. 6,299,994, issued to Towler et al. in 2001.

Claims 5-7 are dependent upon claim 1; whereas claims 15-17 are dependent upon claim 13. For the reasons above, Matsuda et al. is not a proper Section 102(b) reference, and blends air with combustion gas, in contrast to Applicants' method that blends air at difference temperatures. Towler et al. is cited to show different techniques for heating air prior to introducing the hydrocarbon/first air stream prior to the reformer, col. 18, lines

37-41. However, the reference clearly describes controlling the reformer temperature by adjusting the flow rate of the first air stream, col. 18, lines 42-47. Towler et al. discloses a second air stream in line 10 that is mixed with the reformer effluent to produce flue gas in line 11, but this occurs after the reformer, does not control the reformer temperature, and so is readily distinguished from Applicants' invention. Thus, there is nothing in Towler et al. to lead the practitioner to cease the combustion process in Matsuda et al., and to heat one air stream, blend it with another, and use the blend to control the reformer temperature. Thus, even if Towler et al. is combined with Matsuda et al., the combination still fails to show Applicants' method in claims 1 and 13, or in claims 5-7 and 15-17 dependent thereon.

Accordingly, it is respectfully requested that the rejection of the claims based upon Matsuda et al. and Towler et al. be reconsidered and withdrawn, and that the claims be allowed.

Conclusion

It is believed that all grounds of rejection of the claims have been addressed and overcome, and that all claims are in condition for allowance. If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,



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